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ABSTRACT

One of many aspects of the linguistic centrality of the spoken word is the "acoustic trigger" to conceptualization, the most significant primal trigger in human beings, which when activated results in contrast and comparison leading to symbolic conceptualization. The oral/aural mode, or vocal production and acoustic perception, is developmentally central in the capacity for human language, semanticity, and displacement. The acoustic trigger is essential to the normal initiation and development of conceptualization, mentation, and other higher mental processes. Research is recommended in the following topics: the critical states of the trigger's componential development; the development of total triggering capacity of a normal infant; the effects of trigger deficiencies on developmental stages of conceptualization and socialization; intervention techniques to improve trigger performance in children; augmentation of natural trigger strength to increase conceptual capacities; and the development of prosthetic devices for decentering and displacement. (DF)

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THE ACOUSTIC TRIGGER TO CONCEPTUALIZATION: An Hypothesis Concerning the Role of the Spoken Word in the Development of Higher Mental Processes

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Abstract: A crucial example of the developmental centrality of the spoken mode is set forth in the hypothesis labeled "the acoustic trigger to conceptualization." It is suggested that the acoustic trigger is the trigger of choice, in human beings, for the birth of contrast, the symbol, and conceptual thought.

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THE ACOUSTIC TRIGGER TO CONCEPTUALIZATION: An Hypothesis Concerning the Role of the Spoken Word in the Development of Higher Mental Processes in Humans

Frank E. X. Dance

Is the fact that human language is spoken, in its natural development, trivial or non-trivial? What is added to our understanding of human language by considering that it is ordinarily spoken? Both questions provide entry into a consideration of the possible centrality of the spoken word (Dance, 1972). Any consideration of centrality or triviality must also take into account that in terms of which centrality or triviality is being assessed; "trivial or non-trivial in terms of what," or "central to what?" If spokenness is central to human language then such a condition must be taken into account in any efforts to teach a form of human language to members of other species.

Roger Brown (1973) seems to dismiss the possibility of centrality or of non-triviality when he states, "I think we must all agree that vocal production cannot be the essence of linguistic capacity since writing systems are certainly languages, and sign systems used by human communicators very likely are (Brown, 1973, p.36)," and, further, "From the evolutionary point of view, then, these three; semanticity, productivity, and displacement seem to me important in a way that oral-aural transmission, duality of structure, and the like do not (Brown, 1973, p.39)."

If it were to be demonstrated that vocal production was either the essence, or a necessary part of the essence, of linguistic capacity, and if it were demonstrated that the fact that human language is spoken is naturally and normally necessary, whether sufficient or not, for semanticity, productivity, and displacement, a case would have been made, in terms of Brown's observations, for the non-triviality or centrality of the spoken word. Brown's position vis-a-vis a comparison of spoken language with written language or gestural language need not concern us since his point has power only when human language is considered after its initial developmental stages. Once language has been developed it may be represented by almost any means, but in its original development it is spoken. "For an adequate understanding of human language it is necessary to keep in mind the absolute primacy of speech. In societies in which literacy is all but universal and language teaching at school begins with reading and writing in the mother tongue, one is apt to think of language as a writing system that may be pronounced. In point of fact, language is a system of spoken communication that may be represented in various ways of writing (Roberts, 1974, p.648)."

Another measure of centrality/non-triviality would be the extent to which the fact that language is spoken contributes to the raison d'etre of human communication. It has elsewhere been suggested that the raison d'etre of human communication is primarily the enhancement of mentation (or, the augmentation of conceptual thought) and only secondarily the transmission, through interaction, of conceptual thought (Dance, 1978). Such a position

concerning human communication's raison d'etre substantially affects the relationship between the human being's evolutionarily shared communicative repertoire (Smith, 1977) and what may prove to be communicative skills or capacities species specific to humans. If the fact that human language is spoken can be demonstrated as essential to the realization of human communication's raison d'etre, then the non-triviality and centrality of the spoken word may be considered supported.

Human Communication and the Symbol

Symbols, as distinguished from signs, have among their characteristics arbitrariness, generalization, and, if they are to be considered as significant symbols, sharedness. The characteristic of arbitrariness refers to the idea that a symbol's meaning is the result of an arbitrary decision on the part of the user(s) of the symbol ("dog," "hund," "canus," "chien," all arbitrarily agreed upon words used to refer to the same animal) rather than the result of a pair-wise connection between the sign and that to which it refers as thunder serves as a sign of the dissipation of heat in the atmosphere.) The characteristic of generalization suggests that a symbol may be used with more flexibility than a sign in that the symbol, being free from a pair-wise bond, may be applied to many instances of a referent, thus increasing the plasticity and utility of the symbol. Mead's concept of the significant symbol (Mead, 1922) suggests that the significant symbol must be capable of holding the same meaning for both the sender and the receiver of the symbol.

The role and importance of the symbol in human affairs is acknowledged and accepted by many. Many also acknowledge and accept that the symbol seems to play an intrinsically vital part in conceptual, rational thought processes.

As part of its generalizing quality a symbol first allows for individual decentering and displacement, and at a later time, for social decentering and displacement. Whereas a sign is bound to temporal and spatial simultaneity, is fixed to the here and now of its presentation, a symbol allows for movement outside of the moment and away from the specific place of its original presentation. Signs, as here considered, exist only in a specific time and place whereas symbols allow for an existence outside of a specific time and place. Thus, as Burke (1970) points out, a symbol allows for choice, whereas a sign does not; and a symbol, through choice, induces intent, whereas a sign does not (Dance, 1977a). Signs are also essentially explicit, whereas symbols are essentially ambiguous (Dance, 1977b).

The distinction between decentering and displacement is a distinction not between (1) time, and (2) space; but between (1) self/outside of self, and (2) time and space. Decentering allows one to move outside of one's egocentric self (e.g., to consider how one's behavior might appear to others, or to assess one's possible behavior in terms of the reaction of an other). Decentering also allows and facilitates the coding of a message while taking into consideration how the message might be viewed by the receiver rather than solely in terms of how the message is viewed by self (Flavell, 1968; Dance and Larson, 1976, chapter 4). Whereas the initiation of decentering may be a radical development for the human infant, the full flowering of decentering is a slow and gradual process.

Displacement allows moving outside of the present time, or place. Temporal displacement allows and facilitates, through the symbol, movement backwards and forwards in time as illustrated by Edward Arlington Robinson in his poem "Miniver Cheevy" (Miniver loved the days of old/When swords were bright and steeds were prancing;/The vision of a warrior bold/Would set him dancing.) Spatial displacement allows, through the symbol, movement anywhere in space, as Dante illustrated in his Divine Comedy. One may displace without decentering. One's total ego may be carried with one wherever one goes (Mr. Spock is Mr. Spock on whatever planet he visits, Miniver Cheevy is Miniver Cheevy wherever, in time, he goes). However, although one may displace without decentering, one cannot decenter without displacement, even if the displacement is simply outside of one's own self and only for a split-second. Thus, decentering always necessitates displacement, but displacement does not always necessitate decentering.

Human language plays a central role in human conceptualization. Symbols are an essential part of human language. Decentering and displacement are intrinsic and necessary attributes of symbols. Given the preceding, what of importance can be said concerning the relationship of any specific human sense modality to the ontogenesis, or individual development, of the symbol and of its essential characteristics of decentering and displacement? Perhaps there is a sensory stimulus to symbolization and thus to conceptualization. If such a sensory stimulus exists, what might it be and how may it act?

The Trigger's Context

In contemplating possible relationships between an individual's sensory experience and an individual's symbolic conceptualization, it must be made clear that we are always dealing with a particular kind of nervous system within a particular systemic organization, that of a human being. Thus there are certain assumptions underlying any consideration of a possible sense modality / conceptualization linkage. In setting forth the four contextual considerations the term "normal" refers to attributes which are considered by experts to fall within the "average," or "normal" range of distribution for the total population of human infants.

In this discussion we are assuming:

1. A human infant with normal congenital equipment.
2. A human infant born into a normal environment.
3. A human infant exhibiting normal maturation.
4. A human infant exhibiting normal development.

If, indeed, there is any kind of sensory stimulus responsible for conceptualization, it would not be only the visual stimulus, or the acoustic stimulus that would need to be taken into account, but also the infant's organism - brain - mind capacity to receive, process, interact with and build upon the appropriate critical stimulus.

"Stimulus," or "Trigger"?

Whereas the term "stimulus" suggests a discrete and unitary event it seems more likely that the postulated sensory/conceptual relationship might be the

result of a complex of events, a threshold process (Waddington, 1957, p. 20), happening in some phase synchronized and foreordained sequence distributed across time. In a way, such a pattern would be similar to the type of triggering devices found on some highly involved technical or weapon systems (e.g., the convoluted, sequential triggering devices necessary to activate various kinds of so-called "doomsday" weapons). So, by "trigger" is meant some set of stimuli and accompanying activities, in an appropriate context, which initiates a process--in this instance, the process of conceptualization.

A Visual Trigger?

As I understand Erikson (1977) he implies that the developing infant's conceptual skills are initiated by the infant's visual experience. Without intending to derogate the role of vision in the human development there seem to me to be a number of factors arguing against a visual trigger to conceptualization. First, I would raise the possibility that the infant's visual precision develops somewhat more slowly than does the precision of the infant's acoustic and sound-making abilities. The sensory receptive practice of visual behavior begins at birth whereas the sensory receptive practice of acoustic behavior seems to begin in the womb. Second, the infant's visual experience seems to be entirely objective, in the sense that the infant's visual experience is entirely outside of the infant. The infant has little if any part in the creation (not in the "analytic" construction, but in the creation of the objective stimulus presented to the infant's visual analyzer) of that which is presented visually to the infant. The environment surrounding the infant is placed there and is sustained there, not by the infant, but by others. The infant has little or nothing to do with the creation of the visual displays presented to the infant's visual analyzer. Considering the amount of comparative practice the infant has with seeing and with hearing it may even be possible that the infant sees what is seen with somewhat less acuity or precision than the infant, during the same developmental period, hears what is heard. Third, vision, for the infant, exists totally in space rather than in what we judge as internally construed time. The temporal experience with which adults interpret visual displays is the result of holding the visual display in contrast with something other than the visual display itself. The visual display doesn't exist in time as much as the adult viewer perceives time as existing, almost like a frame, around the visual display. "If we don't see what we look at the first time we can generally have another look. A visual display may be presented for several milli-seconds or several years...(Underwood, 1976, p. 14)." Time is an *a priori* concept in terms of vision rather than an *a posteriori* deduction from the visual experience. It does not seem to me that in terms of maturational/developmental rate, or in terms of the attributes of the visual display, there is adequate support for postulating a visual trigger to conceptualization. The ratio of research activities as reported in some of the literature (Haith and Campos, 1977) is clearly in favor of vision as a focus for developmental studies. Our seeming commitment to a visual hegemony, or what Ong (1977) refers to as our "hypervisualism" may be distorting our understanding of the roles of the other sensory avenues to cognition.

A Tactile/Action Trigger?

Bodily schemata have also been suggested as constituting the genesis of conceptualization in human communication (Spitz, 1957). However, the initial action patterns of nipple searching (a headshaking "no" movement on the infant's part) do not seem to be intentionally communicative on the part of the infant but are intentionally construed as communicative only on the part of the observing other. (I)t has become clear that at birth, and for a long time afterwards, action and communication are one. Action, performed by the neonate, is only discharge of drive. But the same action, when viewed by the observer, contains a message from the neonate (Spitz, 1957, pp. 145-146)." Action, taction, kinesthesia, and proprioception all share pre-natal experience as does audition. But, whereas it has been suggested that the infant's visual experience is totally objective, the infant's tactile, proprioceptive and kinesthetic experiences seem to be developmentally subjective. Kinesthesia and proprioception are, for the normally developing infant, manifestly interior and taction, at least in the stages of development with which we are here concerned, is either totally subjective when the infant is alone and fine motor movement has yet to develop, or totally objective when the infant is being fondled and the tactile stimulation is being provided by another. If one is limited to a single sensory analyzer, illusion is impossible because contrast is imperceptible. In the developmental/maturational time period with which we are dealing insufficient evidence is available to support a tactile trigger or action trigger to conceptualization.

An Acoustic Trigger to Conceptualization

What evidence can be presented in support of the hypothesis that there is an acoustic trigger to conceptualization? What is provided by the infant's sound-making and acoustic behaviors, oral/aural, that does not seem to be provided either by vision alone, or by taction/action alone? Mildred Freburg Berry (1969) sets the stage:

> Audition, a primal modality, has a tonic influence upon the level of spontaneous activity in the entire brain. The spontaneous pattern goes on independently of the stimulation by sound. Loss of hearing, hence, is something more than the absence of stimulation--deafness. It means the loss of the spontaneous rhythm, a most important contributor to the "activity quotient" and stability of the central nervous system. If spontaneous rhythm in the auditory circuit is impaired, it could upset the stability of allied modalities (Berry, 1969, pp. 38-39)."

Berry's comment describes a very early tonal influence of audition upon the infant's total nervous system rather than a situation which could by itself account for the birth of mentation. However, the tone of the nervous system is an important part of the total context.

I suggest that the specific quality of the human infant's sound-making/acoustic behavior (oral/aural), which accounts for the effect of the acoustic trigger to conceptualization is the simultaneity of subjectivity and objectivity provided by the infant's oral/aural behavior, resulting in the perception of contrast.

With the infant's utterance of sound there is presented to the infant the possibility of perceiving a contrast between inner and outer within the context of the infant's own behavior. The infant has a control over the production of his own acoustic stimuli to a much greater degree than over any other stimuli. With the utterance of sound, and the acoustic perception of that uttered sound, there is the beginning of a distinction, within the infant, between total subjectivity and the diminution of subjectivity. With the utterance of sound there is the coming into being of something with which the infant is subjectively involved and the simultaneous experience of noting that the sound, originally created within the sounding organism and issuing from it, comes back into one's own ears with an added quality, an added objectivity from having had, for a time, an existence outside of oneself. Unlike vision, which is spatial, an utterance and the accompanying audition is truly temporal. "(O)ne of the most important differences between auditory and visual transmission of information is that whereas a visual display may be presented as an entire unit, with spatial features containing the information, the auditory display (e.g., speech) must be presented sequentially. Here the changes of frequency, intensity, etc. which contain the information vary temporally. Spoken words are here and gone...(Underwood, 1976, p. 14)." The sense of time is initiated and with it the possibility of illusion, "Time is the source of all human illusion (Fowles, 1977)," and "time and change is part of the essence of life (Waddington, 1957, p. 5)." The acoustically received self-generated utterance of the infant has an existence both internal and external, both subjective and objective, an existence in time.

The infant's own utterance, acoustically as well as kinesthetically received back, probably provides the infant's first concious experience of contrast. The acoustic trigger sets in motion for the infant the all important capacity of discrimination between inner and outer, between self and other-than-self. The infant's utterances exist both inside and outside of the infant's person. The infant is an active knower, an active participant who through the acoustic trigger embarks on the construction of his cognitive skills and reality. The uttered sound has both an internal and an external reality. Internal states are substantially more subjective than are external states. As an experience or an activity moves increasingly from internal to external the experience or activity exhibits a corresponding increase of objectivity relative to subjectivity. The externalization of utterance on the part of the infant begins the movement toward increased objectivity, or, at the very least, toward something less than the infant's previous total subjectivity and ego-centricity.

As important as this inception of the subjective--objective distinction may be to the infant, it is not in this distinction that the acoustic trigger provides its most notable contribution. The most significant benefit of the

acoustic trigger is its bringing into being, for the human infant, of the reality of contrast. An acceptance of the reality of contrast entrains the realization of inner and outer, of internal and external, of self and other-than-self, and of possible states of relativity. This new capacity for perceiving and considering contrast is all important for the birth of the symbol, since, as suggested earlier, it is of the essence of a symbol that there be decentering and displacement. Both decentering and displacement require the capacity to move outside of oneself, to move outside of the here and now, the possibility of perceiving something as relative to something else. There is no self without the other. There is no light without dark, no yin without yang, no right without wrong. Conceptualization involves symbolization and all symbolization involves the capacity for decentering and/or displacement. In order to have decentering and displacement there must first be the capacity for perceiving the possibility of contrast, of relativity, of something outside of ones own self, of something other than an ego-centric rooting in the here and now. This possibility for primal contrast is actualized for the human infant by means of the acoustic trigger to conceptualization. This birth of contrast through the acoustic trigger may signal the development of a major discontinuity in Waddington's sense (Waddington, 1957, p. 14). The acoustic trigger may well engender the entire dialectical process entailing alternatives, branchings, discriminations, and choices.

Implicit in the hypothesis of the acoustic trigger to conceptualization is the implication that in the absence of the acoustic trigger, conceptualization is going to be either completely frustrated or seriously impaired. Insufficient evidence is available to show the complete frustration of mentation or higher mental processes in the absence of the acoustic trigger. The evidence for the serious impairment of human higher mental processes is abundant. Human infants congenitally and profoundly deaf have a difficult time both in initiating conceptualization and in the development of a conceptual ability matching, in rate and quality, the conceptual ability of normal, hearing infants. This discrepancy grows, rather than diminishes, with the passage of time. The acoustic trigger is the trigger of choice, the most natural and ubiquitous trigger to conceptualization. Given the proper maturational/developmental context, the acoustic trigger is a primal hair trigger. The fact remains that impaired infants do develop conceptual capacities and skills. The fact suggests that in the absence of adequate equipment for the natural development of an acoustic trigger, other sensory modalities may be so augmented as to result in the infant's acquisition of contrast and thus of decentering, displacement, symbolization, language, and conceptual thought. It seems that the acoustic trigger is the fundamental device among a possible system of devices used by the human organism to achieve conceptualization and that in its absence a different sense modality may be substituted only with the assistance of intervening others, at the expense of great effort, and with results substantially slower and lower than those produced by the acoustic trigger of choice. Conceptualization seems harder to initiate as one moves away from the acoustic trigger, the oral/aural mode, and its proprioceptive--kinesthetic components.

The Theoretical Utility of the Acoustic Trigger Hypothesis

To some degree a theory's value lies in its capacity to show how facts previously thought unrelated may indeed be related. The acoustic trigger hypothesis provides a vehicle for relating facts and insights from diverse lines of research and inquiry, and thus seems to serve a valid theoretical purpose. The acoustic trigger hypothesis serves as a matrix wherein empirical findings, as well as other forms of scholarly thought concerning human communication, may find a point of confluence.

Without intending to be completely reductionistic it still seems appropriate to examine the degree to which the hypothesis is consonant with Pavlov's general observation that the Second Signal System, Human Communication, builds upon the same neuronal structures and laws that affect the First Subcortical Signal System and the First Cortical Signal System (Dance, 1970). The research of Eimas, et. al. (1971, 1973), Molfese (1972), and Morse (1974), concerning the keying and preference of human infants for sounds in the human speech range, may indicate an early trigger component which insures that the infant's maturation and development will be continually keyed and sequentially integrated into the infant's involvement with a vital part of the unfolding trigger mechanism. The situation is one in which there is a constant coordination and testing, by the infant, of the fit among various components of the triggering mechanism up to the actual instant of firing. In considering neurological aspects of language behavior Albert (1972) observes that "The development of the capacity for language may be considered to be based initially and primarily on auditory mechanisms, rather than, for example, on tactile or visual mechanisms. Verbal material presented acoustically is necessarily sequential. Linguistic performance thus depends, at least in part, on the ability to manipulate the sequential aspects of an acoustic input. (T)here may be a group or groups of neurons in the left hemisphere organized to carry out the specific function of maintaining and utilizing the sequential aspects of verbal acoustic inputs (Albert, 1972, p. 247)." Albert's work suggests a basic neurological underpinning for the infant's handling of sequencing, a sequencing behaviorally embedded as a trigger component.

Moving closer to the neurological--oral/aural interface, and basing his analysis on Pavlov's earlier studies, Luria (1966a) suggested that the "(K)inesthetic impulses flowing from the speech organs to the cerebral cortex create the basal component of the second signal system and represent a significant factor in the mechanisms of complex intellectual operations (Luria, 1966a, p. 295)." A visual schema, which I have based upon Pavlov's theory as described by Wells (1956, pp. 77-78) approximates Luria's above description.

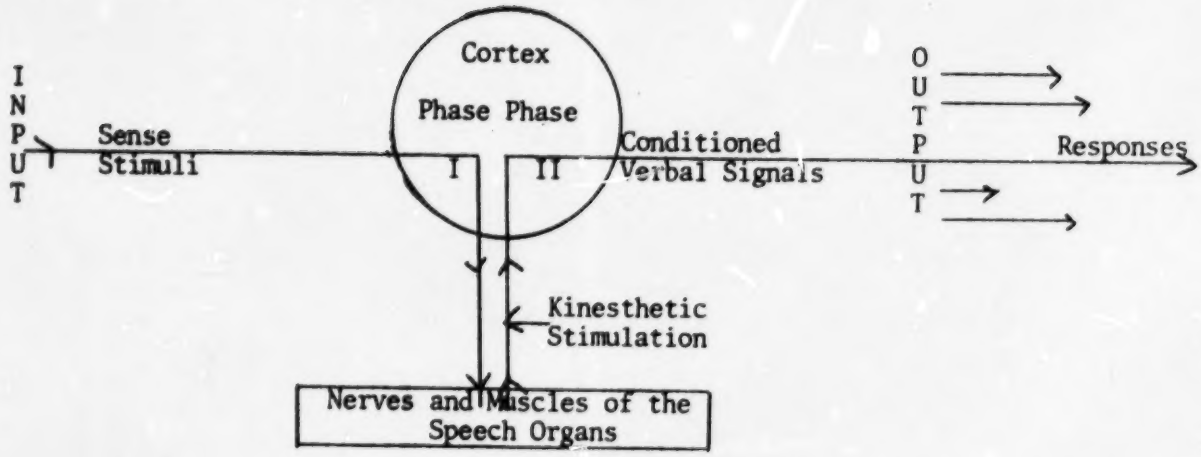


Figure 1.

Penfield and Roberts (1959) present an interpretation suggesting that there is an automatic connection formed between the ganglionic equivalent of sound and the ganglionic equivalent of a concept, and that experience over the years continues to reinforce the back-and-forth neuronal inter-relationships between the two. They comment that "(T)he relationship between the word-sound unit and the verbal unit is not clear," and that "The connection between the speech mechanism and the concept mechanism is evidently reflex and automatic (Penfield and Roberts, 1959, pp. 233-235)."

A schema based on my interpretation of Penfield and Roberts looks like this:

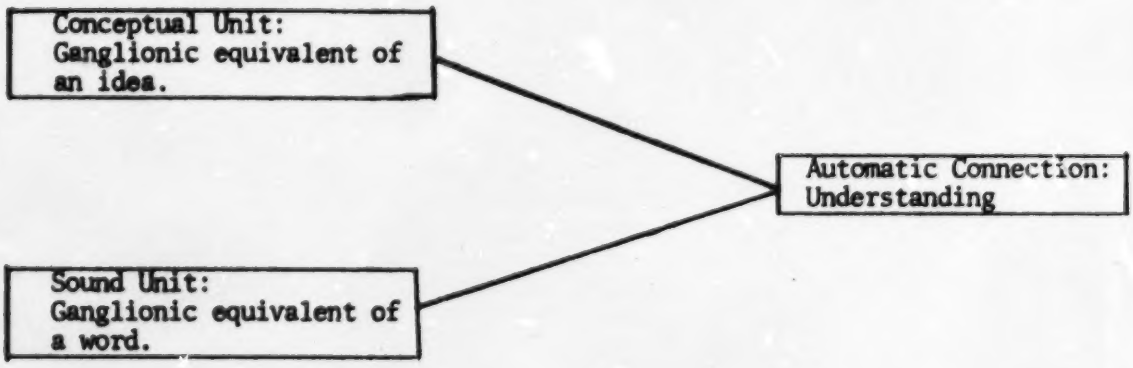
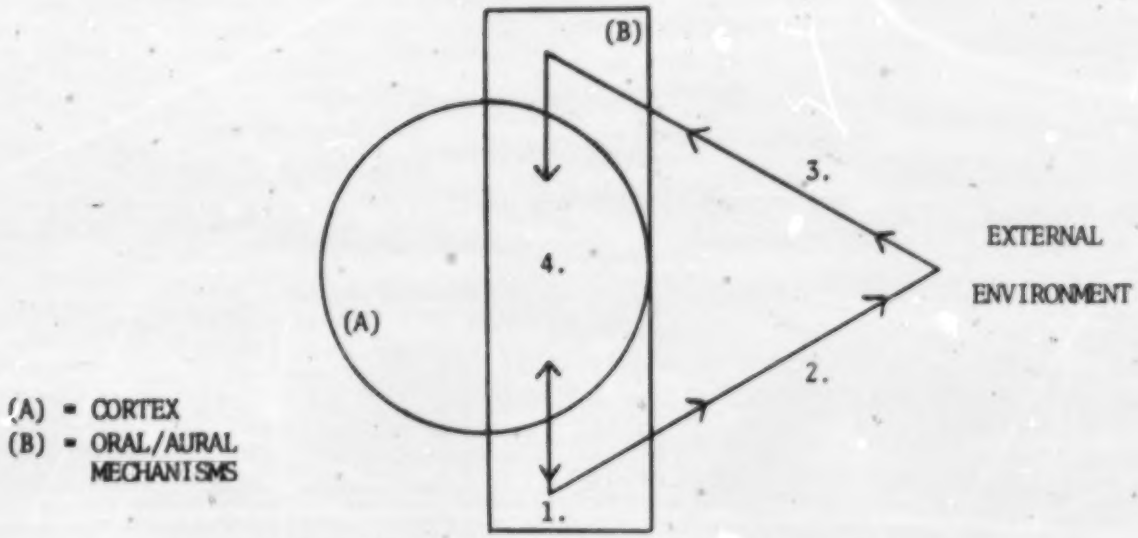


Figure 2.

The acoustic trigger hypothesis, compatible with both Luria and with Penfield and Roberts, may go further than either in explaining more precisely the nature and the underlying mechanisms of the connection between the oral/aural mode and conceptualization.



1. Internal proprioceptive/kinesthetic stimuli arising from oral utterance.
2. Passage from internal/subjective oral utterance to external/objective existence in acoustic space.
3. External acoustic stimuli arising from self's aural reception of self oral utterance.
4. Comparison of 1 and 3, within total context, triggering contrast, relativity, decentering, displacement, the symbol, and conceptualization.

Figure 3.

At a more molar observational level, Luria (1966b) makes a statement that certainly bears upon the hypothesis, "The development of the ability to perceive spoken sounds and to hear speech requires the close participation of the articulatory apparatus and assumes its final character only in the process of active articulatory experience. The first years of development of speech are taken up with this acquisition of the ability to hear speech, with the participation of articulation (Luria, 1966b, p.102)." Luria's comment also touches upon the analysis by synthesis postulate to which Cooper alludes: "All these models...have in common a listener who actively participates in producing speech as well as in listening to it in order that he may compare his internal utterances with the incoming one (Cooper, 1972, p. 42)." Although Cooper is discussing the production aspects of speech communication and at a stage of development quite a bit later than that upon which we have been concentrating, these production aspects flow quite naturally from the individual's continual utilization of the skills originally developed as a result of the firing of the acoustic trigger. Halwes and Wire (1974) also touch upon this phenomenon:

> Presumably those invariant structures which are linguistically relevant on the input side are the same as those structures which are linguistically relevant on the output side, in the coordination of the articulatory muscles, for there is a strict isomorphism between the linguistically relevant aspects of the acoustic signal and the linguistically relevant aspects of the articulatory gestures, the former being produced directly by the latter. Moreover, the neural machinery for processing the acoustic signal evolved together with the neural machinery for controlling articulation.
>
> -(Halwes and Wire, 1974, pp. 387-388).

The acoustic trigger, based in neuro-physiological and systemic activities, joined with psychological and social processes through the acoustic reception of sound uttered within a human environment, exhibits the Pavlovian model of accruing levels of neuronal sophistication. The on--off pulsing of the nervous system underpins all sensory modalities and serves as the base for the eventual development of the acoustic trigger.

The distinctive features hypothesis of the Praguean School suggests that, "One might, therefore, distinguish between 'phonetic' and 'distinctive' features for a particular natural language, distinctive features being those phonetic features which are also contrastive features (Winitz, 1969, p. 79)." Perhaps the acoustic trigger serves as a grammatical link, a bridger of the gap between undirected sound and latent meaning through which the sound joins with and brings forth into recognition the latent meaning. The distinctive features hypothesis is contrast dependent. Could the initial utterance serve as the subject, the perceived but altered utterance as the object and the contrast between the two, the original predicate? The acoustic trigger might serve as the primary example of the needed interaction between the human organism and the environment wherein the effector mechanisms from the organism actively send out into the environment and then reacquire the

sent-out but altered stimuli thus providing an initial syntactic expression. If deep structure can possibly be construed as the ability to differentiate then the acoustic trigger may be the language acquisition device for human beings. The acoustic trigger may be the peculiarly human manifestation of "The cognitive base that undergirds both verbal and nonverbal communication (and that) arises out of sensory-motor interaction with the animate and inanimate surroundings (Savage and Rumbaugh, 1977, p. 304)." The acoustic trigger may provide the peculiarly human "grammar of sensory-motor interaction (which) comes to serve as the basic structure or rule base for (uniquely human) communicative interchange...(Savage and Rumbaugh, 1977, p. 304)." (The material within parentheses in the Savage and Rumbaugh quotations is this author's.)

In the 19th Century, Wilhelm von Humboldt (1971) while discussing intellectual development, speaks of how "(I)n its intellectual striving it (an idea) makes its way past the lips, its product wends its way back to the speaker's own ear. The concept is thus shifted over into a state of objectivity without losing its subjectivity. Only language is capable of this. Without this feature, that is without this continual regression of objectivity to the subject in which language collaborates the formulation of concepts (and consequently all true thinking) is impossible (von Humboldt, 1971, p. 35)." The acoustic trigger hypothesis provides an explanation for the source of the subjectivity/objectivity contrast which von Humboldt believed to be an essential aspect of all true conceptual thought.

Kenneth Burke (1970) and Rene Spitz (1957) center upon the presence of contrast in their considerations of the role of the negative in human behavior. Spitz noted, "The acquisition of the 'no' is the indicator of a new level of autonomy, of the awareness of the 'other' and of the awareness of the self; it is the beginning of a restructuration of mentation on a higher level of complexity; it initiates an extensive ego development,...(Spitz, 1957, p. 129)."

Burke observes, "The negative is a peculiarly linguistic marvel,...there are no negatives in nature, every natural condition being positively what it is (Burke, 1970, p. 19)." Just as there is no negative without a positive, no "no" without a "yes," there is no self without the other. "The beginning awareness of the self is predicated on the awareness of the 'other.' An unmistakable testimony of this self-awareness is provided around eighteen months, when the child begins to speak of himself in the third person (Spitz, 1957, p. 130)."

In developing his theory of personality George Kelly (1963) proposes that a person's construction system is composed of a finite number of dichotomous constructs and that "Much of our language, as well as our everyday thinking, implies contrast which it does not explicitly state. Our speech would be meaningless otherwise. (Kelly, 1963, pp. 62-63)." Kelly further suggests that it is the availability of these dichotomous constructs which finally leads to personal choice. Such a dichotomous presence is also given added clarity through the hypothesis of the acoustic trigger.

Coda

We have been considering one from among many possible aspects of the centrality of the spoken word. A crucial example of the developmental centrality of the oral/aural or spoken mode is set forth in an explication of the hypothesis labeled "an acoustic trigger to conceptualization." The quest has been for what Ong alludes to as an "...understanding of the psycho-dynamics of oral noetics (Ong, 1977, p. 310)."

The acoustic trigger is the primal trigger of choice in human beings for the birth of contrast, the symbol, and thus of higher mental processes and human language.

A case has been presented for the essential role played by vocal production and acoustic reception, or the oral/aural mode, in the capacity for human language as well as for semanticity and displacement in human language. The spoken mode, it has been suggested, is developmentally central although in later years, with the acquisition of literacy, modal equipotentiality may develop.

If the raison d'etre of human communication is primarily mentation and only secondarily transaction or interaction, the case has also been presented that the acoustic trigger is essential to the normal initiation and development of conceptualization, of mentation, and of the development of higher mental processes.

In order to more fully develop the acoustic trigger hypothesis many strands of investigation need to be undertaken and interwoven. We need more closely to bracket in upon the critical stages of the trigger's componential development as well as upon the development of the total triggering capacity on the part of the normal infant. We also need to investigate children in whom the natural trigger is deficient in order to study the effects of such deficiencies on developmental stages of conceptualization and socialization. We need, in order to test the validity of the hypothesis, to investigate what might be done to intervene and thus improve the action and effects of the trigger in all children. Is it possible to augment the trigger's natural strength so as to heighten conceptual capacities in all human beings? The possibility of prosthetic devices for decentering and displacement could also be examined.

The acoustic trigger, the oral/aural mode, when pulled or activated results in contrast and comparison eventuating into symbolic conceptualization. The hypothesis seems worthy of consideration and investigation since, if proven, not only would the non-triviality and centrality of the spoken word be demonstrated, but also we would raise our general understanding of the human condition.

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